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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,719	07/16/2003	Chien-Wei Li	H0005056	1571

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EXAMINER

MCNEIL, JENNIFER C

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

15

Office Action Summary

Application No.

10/621,719

Applicant(s)

LI ET AL

Examiner

Jennifer C. McNeil

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 23-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-22, and 39, drawn to a coating, classified in class 428, subclass 701.
- II. Claims 23-28, drawn to a method of forming a coating, classified in class 427, subclass 252.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product may be made by reacting the tantalum and alumina at the time of deposition, as in CVD.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Michael Shimokaji on April 22, 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-22, and 39. Affirmation of this election must be made by applicant in replying to this Office action. Claims 23-38 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of

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inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 states that the composition consists essentially of AlTaO_4 . How can the coating essentially consist of this when at least one metal oxide is also added to the coating, as per claim 1?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Chakrabarti et al (US 5,802,091). Chakrabarti teaches a coating comprising an oxide of tantalum and aluminum. The ratio of alumina to tantala may be 50:50 in which the coating is considered to form a second phase of AlTaO_4 . With an equal amount of both tantala and alumina, the overall coating would have more than 50 mol% of the AlTaO_4 phase. The ratio may also be such that a smaller amount of alumina is provided (the

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ratio may go as low as no alumina added) whereby the balance of the coating may be considered tantala.

The instant claims refer to tantala as being a choice of the balance of the coating.

Regarding the CTE, the coating of Chakrabarti is composed of a similar material as that of the claims, and would therefore be fully expected to possess commensurate properties.

Regarding claims 7, 8, 11, 16, and 17, the 50:50 ratio would be fully expected to yield a composition having 100% AlTaO_4 .

Regarding claims 9 and 10, the method by which the coating is made is not considered a structural limitation. Furthermore, the coating of Chakrabarti may have a 50:50 ratio, which meets the limitation of the claim.

Regarding claim 18, the substrate the coating is deposited on may be silicon based.

Claims 1, 2, 6-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsudaira (US 4,670,355). Matsudaira teaches a coating comprising tantala and alumina in a ratio of between 50:50 and 95:5 by weight. With an equal amount of both tantala and alumina, the overall coating would have more than 50 mol% of the AlTaO_4 phase. The ratio may also be such that a smaller amount of alumina is provided (the ratio may go as low as 95:5) whereby the balance of the coating may be considered tantala. The instant claims refer to tantala as being a choice of the balance of the coating.

Regarding the CTE, the coating of Matsudaira is composed of a similar material as that of the claims, and would therefore be fully expected to possess commensurate properties.

Regarding claims 7, 8, 11, 16, and 17, the 50:50 ratio would be fully expected to yield a composition having 100% AlTaO_4 .

Regarding claims 9 and 10, the method by which the coating is made is not considered a structural limitation. Furthermore, the coating of Matsudaira may have a 50:50 ratio, which meets the limitation of the claim.

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Regarding claim 18, the substrate the coating is deposited on may be silicon based (quartz).

Claims 1-22, and 39 are rejected under 35 U.S.C. 102(a) as being anticipated by Li et al (US 2002/0136835). Li teaches a coating for a silicon bases substrate. The coating includes tantala and alumina. The Ta_2O_5 may incorporate up to 50 mol% of alumina so that the majority (at least 50%) of the phase in the coating becomes $AlTaO_4$, and the CTE matches that of the substrate. Specifically, if the substrate is SiC, the CTE is about $4-5 \times 10^{-6} C^{-1}$ (paragraph 17). Li teaches that alumina may be the only additive provided with tantala. Li gives examples of formation of the $AlTaO_4$ coating in a manner commensurate in both method and composition to that of the instant specification. As such, it is fully expected to possess similar characteristics, such as $AlTaO_4$ phase formation, and CTE values. Furthermore, Li teaches a CTE in the same range as the instant claims. Li teaches a coating having a thickness of 1-50 mils, and specifically 2-10 mils.

Regarding claims 9, 10, and 39, the method by which the coating is made is not considered a structural limitation. Furthermore, the coating of Li is deposited in a manner similar to that claimed.

Regarding claims 18 and 19, the substrate may be SiC-SiC or SiN.

Regarding claim 22, the substrate is a gas turbine component.

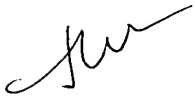
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer C. McNeil whose telephone number is 571-272-1540. The examiner can normally be reached on 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jennifer McNeil
April 30, 2005